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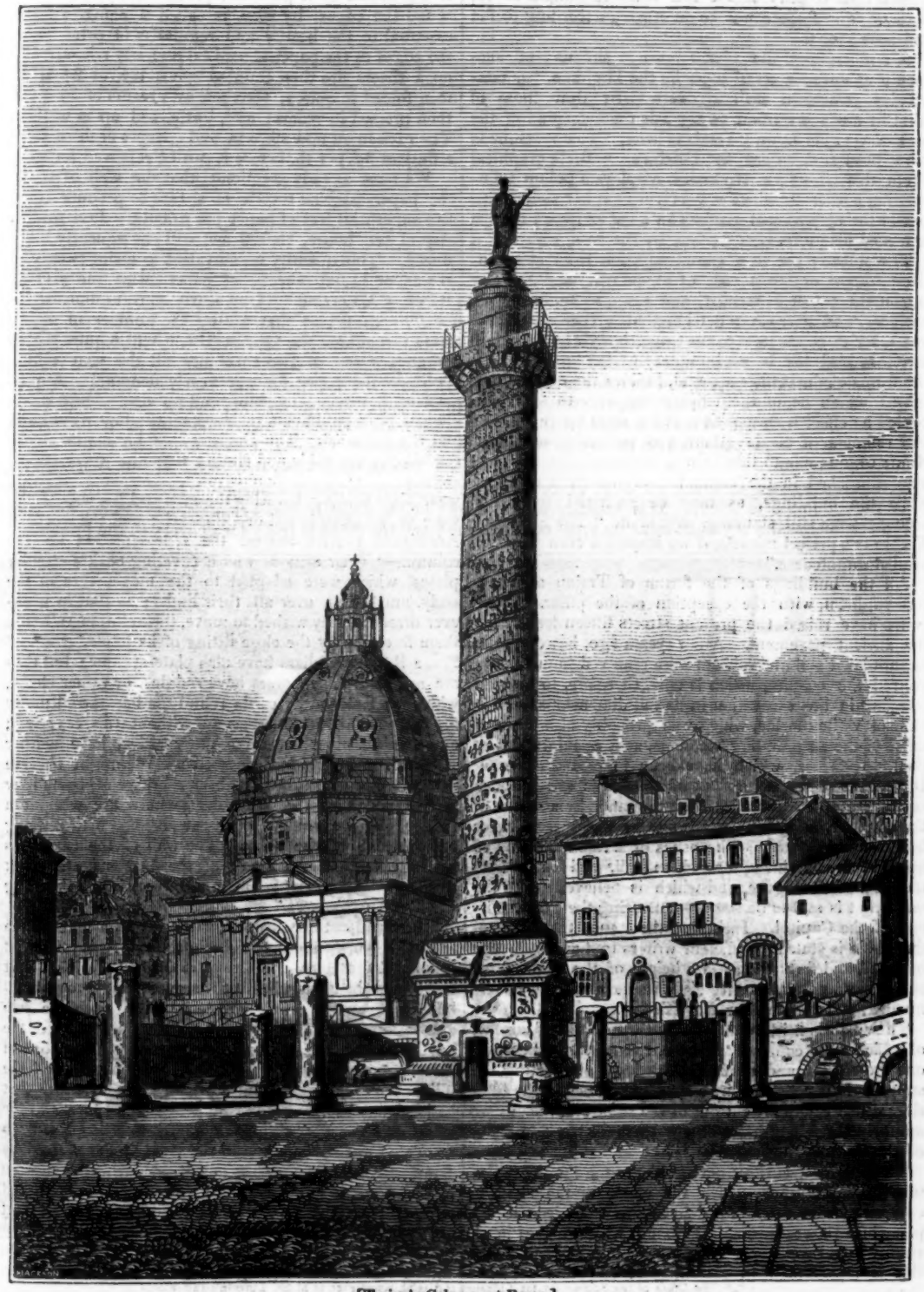
TRAJAN'S COLUMN.



[Trajan's Column, at Rome.]

Among the monuments of antiquity still remaining in Rome, one of the most famous and most interesting is the beautiful column of which the above is a representation. According to the inscription which is still to be read on its base, it was erected by the senate and people of Rome in honour of the victories obtained by the emperor Trajan in his two expeditions against the Dacians, in the first of which he compelled that fierce people to sue for peace, and in the second entirely conquered their country, and added it to the dominions of Rome. The former was undertaken in the year 101, and lasted for three years;—on the latter he set out in 105, and returned the year following, the war having been thus speedily terminated by the Dacian king, Decebalus, putting himself to death to avoid the risk of what he deemed a worse fate. The column was erected in the year 115, after Trajan had gone on his last expedition, that against the Parthians and Armenians. From this he never returned, having been cut off by a dysenteric fever at Seleucia in 117. He never, therefore, beheld the magnificent structure which had been raised to record his glory.

The pillar of Trajan originally stood in the midst of a large square or forum, as it was called, the buildings surrounding which comprehended a palace, a gymnasium, a library, several triumphal arches, porticos, and other erections in the most superb style of architecture. Gilded statues and military ensigns glittered on the fronts of the buildings; and, besides the column, an equestrian statue of the emperor appears to have occupied a conspicuous position in the open space within. For richness of display there was probably nothing in Rome comparable to this forum. Cassiodorus, a writer who flourished in the beginning of the sixth century, while the buildings, as may be gathered from his account, were still standing, says of it, "The forum of Trajan is a perfect miracle, if we inspect it even with the utmost minuteness."

All the buildings of the forum of Trajan are now thrown down, with the exception of the pillar. Their ruins have raised the present streets fifteen feet above the ancient pavement. A few years ago, however, the accumulated soil and rubbish were removed immediately around the column, which is now, therefore, to be seen standing in the excavation in its full dimensions. It is built of white marble, which was probably also the material of the surrounding buildings, as it certainly was of their pavements, which have been in part uncovered. It consists of a base, a shaft of the Doric order, and a capital; and it was anciently surmounted by a statue of the emperor, in place of which one of the apostle Peter has been substituted. The ashes of Trajan are said to have been contained in a golden ball, which rested on the head of the figure, and which is believed to be the same that is still to be seen ornamenting the great staircase of the Capitol. Including the statue, the height of the whole is stated by ancient writers to have been one hundred and forty feet. The height of the pillar alone is one hundred and twenty-eight modern Roman or one hundred and twenty-four English feet.

The whole consists of only thirty-three blocks of marble, of which eight compose the base, twenty-three the shaft, one the capital, and another the pedestal supporting the statue. It is ascended by a spiral staircase in the interior, which is entirely cut out of the same stones. There are forty-three loop-holes or apertures for the admission of the light.

But the most curious part of the column is the sculpture in bas-relief by which the whole of the shaft is covered. The series of delineations runs round the pillar in an ascending spiral riband, which makes in all twenty-two revolutions before reaching the top. On this is represented, in chiselling of exquisite delicacy, the succession of Trajan's Dacian victories, together with the two triumphal processions by which they were celebrated. The figures, which are designed with great spirit, are not fewer than between two and three thousand in number, that of Trajan occurring about fifty times. In the lower part of the shaft they are each about two feet in height; but as they ascend and are removed farther from the eye their dimensions are enlarged, till at the top they become nearly double the size of those below.

These sculptures are extremely interesting in another point of view, as well as for their merit as works of art. "The Roman dress and manners," says Mr. Burton, in his 'Description of the Antiquities of Rome,' "may receive considerable light from these bas-reliefs. We find the soldiers constantly carrying their swords on the right side. On a march they are generally bare-headed;—some have no helmet at all; others wear them suspended to their right shoulder. Some of them have lion's heads by way of a cap, with the mane hanging down behind. Each of them carries a stick over the left shoulder, which seems to have been for the purpose of conveying their provisions. We may observe a wallet, a vessel for wine, a machine for dressing meat, &c. We know from other accounts that they sometimes carried sixty pounds, and food for seventeen days: they never carried less than enough for three days. Their shields are oblong, with different devices upon them. The standards are of various kinds; such as a hand within a wreath of laurel, which was considered a sign of concord. Pictures also were used, which were portraits of gods or heroes. The soldiers wear upon their legs a kind of tight pantaloon, reaching a little below the knee, and not buttoned. The Dacians have loose pantaloons reaching to the ankle and shoes; they also carry curved swords. The Sarmatian cavalry, allies of Decebalus, wear plate armour, covering the men and horses. These were called Cataphracti or Clibanarii; and the words of Ammianus exactly answer the representation on the column—'Their armour was a covering of thin circular plates, which were adapted to the movements of the body, and drawn over all their limbs; so that in whatever direction they wished to move, their clothing allowed them free play by the close fitting of its joints.' * * * Some Roman soldiers have also plate-armour; but they are archers. The horses have saddles, or rather cloths, which are fastened by cords round the breast and under the tail. The Dacian horses are without this covering; and the Germans, or some other allies, have neither saddles nor bridles to their horses. We might observe several other particulars, such as a bridge of boats over a river, and that the boats everywhere are without a rudder, but are guided by an oar fastened with a thong on one side of the stern. The wall of the camp has battlements, and the heads of the Dacians are stuck upon it. The Dacian women are represented burning the Roman prisoners."

Our wood-cut is principally copied from a plate in the splendid work on the 'Architectural Antiquities of Rome,' by Messrs. E. Cresy and G. L. Taylor. It represents the column, with the surrounding ground and buildings, as the whole appeared soon after the late excavations. In the foreground is seen a portion of the pavement of the basilica, or palace, which formed one of the most sumptuous buildings of the Forum; and the pillars which are ranged around are some of those that had belonged to the same edifice. "The church to the left," says the description appended to this print, "is dedicated to the Madonna di Loretto; it was erected by Bramante, and its cupola is one of the earliest specimens of that modern appendage to a church, and is supposed to have been the prototype of the admirable dome of St. Peter's.

There is a work, we may add, published in Rome, in a folio volume, in 1616, by a Spanish friar of the name of Alfonso Ciaconus, or Ciacono, in which is given a

series of delineations of the sculptures on Trajan's column, in above three hundred plates, on a large scale. It is entitled 'Historia Utriusque Belli Dacici à Trajano Cæsare gesti;' and the author has endeavoured to make out a connected account of the incidents of the emperor's two Dacian expeditions from the historical record of them on the column. It might be interesting to compare these classic picture annals with the attempts of the Mexicans in the same style.

MINERAL KINGDOM.—Section 13.

Organic Remains.—(*Continued.*)

The examples we have as yet given of the more remarkable fossil animals have been such only as are found in the secondary strata,—that is, in the chalk and the beds inferior to it. We shall now mention some of the most striking circumstances connected with those met with in the formations superior to the chalk, or in what are usually termed the tertiary strata. In these a remarkable change in the nature of the animal remains takes place. There commences, immediately after the chalk, a nearer approach to the present state of the animal creation, for we then first begin to find fossils identical with species now living, whereas nothing of the sort is to be seen either in the chalk or in the strata beneath it.

The tertiary strata consist of a very extensive series of deposits, showing, by their positions and the nature of the organic remains they contain, that some of them must have been formed at much earlier periods than others of the same class, and that there is an order of succession in these, as in the secondary strata, which is never reversed. There is, moreover, abundant evidence to prove that, in many instances, great local changes had taken place in the forms of the external crust of the globe, between the deposit of one series of the tertiary strata and that of the formation which lies above it. There is, however, among these beds a much greater resemblance to each other, in so far as mineral composition is concerned, than in the case of the secondary strata;—they consist of sand, sandstones, clays, and limestones, so very like one another, and, in fact, so identical in mineral structure, that it would be impossible to distinguish between two strata, that were deposited at periods many thousand years distant, perhaps, from each other, by the mere mineral characters, but which we are enabled to do, with the utmost precision, by the different species of fossil shells which they severally contain, generally in great abundance, and having their forms, for the most part, well preserved.

Observations have already been made in different countries with so great a degree of accuracy, and upon so extensive a scale, as to enable geologists to ascertain that there have been four great epochs, or periods, succeeding each other in chronological order, during which the tertiary strata were deposited. The grand distinction between secondary and tertiary formations is founded upon the existence in the latter of animal remains identical with living species; and the extension of that same principle forms the ground of separation between the successive periods of the tertiary series. Mr. Lyell, in his recent work, ('Principles of Geology,' vol. iii.,) has been the first to give a full systematic view of all we know concerning that grand division of the strata which envelope the earth of what we may call the tertiary system; and he has proposed expressive and convenient designations for the four great periods above alluded to, calling them the Eocene, Miocene, Older Pliocene, and Newer Pliocene Periods. The termination *cene* is taken from a Greek word signifying recent, and the rest of the term indicates the *proportion* of recent or living species contained in the deposit. Thus the first, or earliest period, which comprehends the deposits immediately after the chalk, he calls Eocene, from *eos*, Greek for the early dawn, because recent species just then begin to appear; the second period he calls Miocene, from *meion*, signifying a minor quantity; the third period, the older Pliocene, from *pleion*, a major quantity; the fourth period, Newer Pliocene, from the increased proportion of recent species. When future discoveries require us to establish more minute subdivisions,—as, for instance, our finding deposits older than the Miocene, but more modern than the Eocene,—they may be called Newer Eocene, or Older Miocene, according as they partake more or less of the nature of the great divisions below and above them.

It has been found that in certain beds above the chalk the number of fossil shells, which can be identified with living species, does not exceed one-thirtieth part of all the shells they contain, and these beds are referred to the Eocene period; another suite of deposits, lying above the Eocene, have been found to contain about one-fifth part of recent species, and these are considered as belonging to the Miocene period; above them come a more modern set, having from a third to more than a half of recent species, and these constitute the beds of the Older Pliocene period; the deposits above these last contain so great a proportion as nine-tenths of recent species, and they are referred to the Newer Pliocene period. Expressed in numbers, the relative proportions stand thus:

Eocene period	containing	3½	per cent. of fossil shells identical with existing species.
Miocene period	„	20	
Older Pliocene period	„	50	
Newer Pliocene period	„	90	

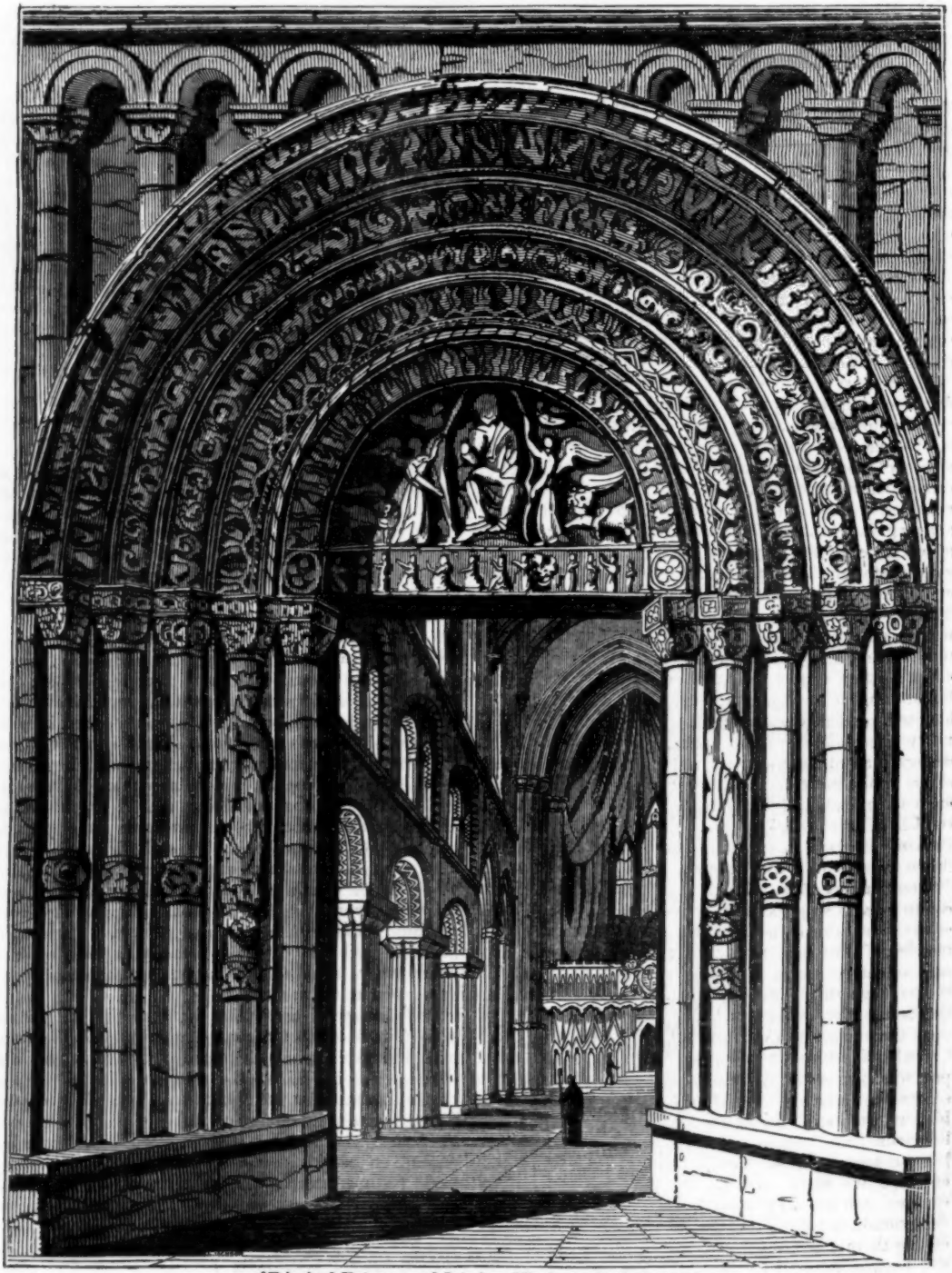
It is not, however, to be understood that such periods are defined by strict limits in nature; the terms are no more than expressions of the present state of our knowledge—arbitrary signs, for the convenience of classification, indicating the predominance of certain characters in the deposit. It is but a few years since the great tertiary division was established; and there is every reason to expect, from past experience, that the examination of unexplored tracks of those deposits will bring to light new groups, which, by their position and fossils, may be proved to be intermediate in point of age between two of the great divisions or periods above mentioned. Discoveries such as these Mr. Lyell anticipates, in which case we might have lower, medial, and superior *Eocene* deposits, and likewise lower, medial, and superior *Miocene* deposits. The observations already made have pretty well established that all living species are not of the same degree of antiquity; that some have preceded others upon the surface of the earth by an interval of time to which we have no means of assigning any limit. The question whether the newly arriving species made their appearance singly or in great groups all at once, is far from settled in the minds of geologists; and it can never be satisfactorily decided except by very extended observations, by minute and accurate researches, upon a very comprehensive scale.

Another grand distinction between the tertiary and secondary classes is the frequent occurrence in the former of strata which must have been deposited in vast lakes of fresh water, while we have no instances of the kind in the latter. We have, it is true, secondary deposits containing fossil remains of animals which must have lived in fresh water, but in those cases there is usually a mixture of marine shells, showing that these deposits must have taken place in estuaries, where great rivers had entered the sea. In the tertiary periods we meet with vast quantities of fossil shells belonging to species which inhabit lakes and rivers, many species of lake and river fishes and reptiles, of land animals, and of plants. These sometimes occur by themselves in accumulations of successive layers; at other times they are interstratified with beds containing marine shells only, and very often the productions of fresh water and sea water are mingled together in the same bed—phenomena which very clearly

indicate extraordinary and very extensive local changes in the earth's surface. Some fossil shells identical with living species are common to all the four periods, others that are common to all the periods are now extinct. We have many instances of fossil shells belonging to living species mingled with the bones of extinct quadrupeds. Of all organized bodies, shells and corals have had the longest range of existence, for there are living genera of both which may be traced back from the tertiary beds to those strata in which the first dawn of animal life is discoverable.

[The subject of Organic Remains will be concluded in Section 14.]

CATHEDRAL OF ROCHESTER.



[Principal Entrance and Interior of Rochester Cathedral.]

There is no other of our cathedrals, perhaps, that presents so antique and time-worn an aspect as that of Rochester. It is in reality one of the oldest ecclesiastical edifices in England, having been principally erected before the close of the eleventh century. Its architecture, therefore, is of the earliest Norman style, or that which preceded what is commonly called the Gothic.

As we stated in our account of the city of Rochester,

in a former Number, the cathedral stands near the middle of the town, and at a short distance south from the High Street Owing to the chapels and other extraneous structures which have been attached to it, the building has an irregularly shaped exterior; but what forms the church consists of a nave, with aisles, and a choir, extending, as usual, from west to east, crossed by two transepts, the greater nearest the west end, and the other between the bishop's throne and the high altar in the choir. The entire length of the cathedral, from east to west, is 306 feet, of which 156 feet constitute the portion from the entrance of the choir to the east end. The breadth of the nave, including the aisles, is 61 feet; and the greater transept is 122 feet, and the other 90 feet in length from north to south. Over the intersection of the greater transept and the nave is a tower, surmounted by a spire of 156 feet in height. The extent of the west front is 81 feet; and rising along this line are four smaller towers, one from each of the extremities, and the other two from the sides of the great door.

This principal entrance to the church has formerly presented an extraordinary display of rich and florid architecture, although its decorations are now sadly defaced. On each side of the door, the whole depth of the wall, stands a row of small pillars, supporting a corresponding series of arches. Two of the pillars are fashioned into statues, which are understood to have been intended to represent Henry I. and his queen, Matilda, in whose time the structure was raised. The capitals of the others are formed of figures of various flowers and animals. Every stone of the front arch is also marked by a separate device. Under the arch there appears to have been carved a representation of Christ, sitting in a niche, with an angel on each side, and the twelve apostles at his feet; but the design is now greatly obliterated. There is a large window over the door, which, however, is evidently the work of a later age.

The windows throughout the cathedral, indeed, as well as the roof, appear all to have been raised higher long after the first erection of the building. The more ancient part of the interior is in a plain style of architecture; and the circular arch, and massy pillar with its unornamented capital, every where indicate the remote age to which the fabric belongs. Small columns of Petworth marble ornament the choir, the fittings up of which were renewed about the middle of the last century.

The first Christian church at Rochester was begun by Ethelbert, King of Kent, in the year 600, and finished in 604; when the bishopric was established, and Justus, one of the companions of Augustine, was appointed by that prelate to preside over the diocese. With the exception of a short period during which he retired to France, on the relapse of Edbald, the son and successor of Ethelbert, to idolatry, Justus continued to occupy the see till he was removed, in 624, to Canterbury. Rochester, like almost every other Saxon town, was repeatedly laid nearly in ruins in those early times, sometimes by hostile attacks, sometimes by accidental fires; but if the cathedral was ever entirely destroyed on any of these occasions, there is at least no account of its having been rebuilt. The first new structure of which we read, is that which still remains, and which was begun by Bishop Gundulph, about the year 1080. Gundulph was bishop of Rochester for above thirty years, and appears to have applied his great talents with extraordinary zeal and energy to the promotion of the interests of his see. At the same time with the cathedral, King Ethelbert had founded here a religious house or monastery, which he filled with secular canons. This establishment, Gundulph, among his other innovations, transformed into a house of regular Benedictine monks, the society to which he had himself belonged before his elevation to episcopal rank. Besides his new cathedral, he built a lofty tower, the ruins of which still remain, as an addition to the castle erected in the city by the Conqueror, and a smaller structure of the same kind close to the north wall of the church, which is also still standing, and which is supposed to have been intended as a receptacle for the charters and other records of the see. The funds for his different architectural undertakings he seems to have derived in great part from the liberality of the King, Henry I., with whom and his Queen Matilda he was a great favourite. An old writer, William Lambarde, in his 'Perambulation of the County of Kent,' says of Gundulph, that "he never rested from building and begging, tricking and garnishing, until he had erected his idol building, to the wealth, beauty, and estimation of a Popish priory." The eastern part of the church, however, forming the choir, was not built till the middle of the thirteenth century; and other parts of the fabric are of still more recent date. The whole suffered considerable injury at the Reformation; but much greater at the commencement of the civil wars in the seventeenth century, when a party of the Parliamentary soldiers, under Colonel Sandys, are said to have converted one part of the church into a carpenter's shop, and another into a tippling house.

A VISIT TO HOFWYL.

We have received the following interesting communication from a correspondent upon whose accounts we can place a full reliance. The establishments for education, which have been founded and matured in Switzerland, by the public spirit and laborious perseverance of M. Fellenberg, have now existed about thirty-two years. Their high merits have been long familiar to the English public. At the present time, we understand that certain political dissensions, which have produced much ill-will and unhappiness in the canton of Berne, have had the common effect of all violent contests of opinion,—they have made men indifferent or opposed to those institutions for the amelioration of the human character, whose great object is to elevate our species above the intolerance and narrowness of party-feeling. We trust that the open or concealed hostility which, it is said, now threatens the excellent establishments of M. Fellenberg will speedily be put to shame by the good sense of the people of Switzerland; who will perceive in such institutions the surest preservation against the outbreaks of a mistaken zeal for freedom, on the one hand, and the tyranny of exclusive pretensions, on the other.

In the month of August, 1832, I travelled into Switzerland for the purpose of making myself acquainted with the schools and institutions at Hofwyl. Situated about three leagues from the picturesque capital of Berne, amidst a beautiful scenery, composed of a cultivated vale, the Jura ridge of mountains, a pine forest, a small lake, and the glaciers of the Bernese Alps, stand the extensive buildings of the establishment, surrounded by about two hundred and fifty acres of farm land. Upon my first arrival, before I could obtain an opportunity of presenting my letters to the benevolent founder, I wandered about in various directions,—all was business and activity. Here was a troop of lads cutting the ripened corn, while another troop was engaged in conducting it to the barns. Here was the forge in activity, and there some little gardeners performing various operations in small plots of ground that were portioned out: here were a group of little girls gleaning, there others carrying water, most of them singing while thus employed. But my attention was peculiarly arrested by about one hundred men, who in a large open building, erected in a recess of the garden, appeared to be engaged like boys in a school-room; over the entrance was inscribed this motto, "The Hope of their Country."

I was at last fortunate enough to be admitted into the

study of M. de Fellenberg,—a man somewhat advanced in years, with a countenance beaming with intelligence and kindness. De Fellenberg was, by birth, one of the ancient aristocracy of the country, and in possession of the hereditary property of his family. He determined upon devoting his fortune, and the labour of a life, in the endeavour to effect the regeneration of his native land, by the means of education. "I will infuse good habits and principles into the children," said he, "for in twenty short years these children will be the men, giving the tone and the manners to the nation." For thirty-two years has he pursued his steady course, increasing in influence, and extending his establishment as his scheme grew upon him, until it has become what he described to me. "This," said he, pointing to a large building, "is the institute for the boys of the higher classes. Here are their dining-rooms;—arranged on each side of yonder galleries are their dormitories. Here you see their gardens, their museum, their work-shops, their school-rooms; here their gymnasium where they exercise themselves in wet weather, here their stream of running water where they bathe every day: study is their employment, bodily labour their recreation,—but bodily exertion I insist upon. There is no health, no vigour of mind, no virtue without it. Those persons grown to manhood, who are mixing with the boys, are placed by me to observe every action, and catch every expression. My grand object is to comprehend thoroughly the character of my pupils, in order that I may work more efficaciously upon them. These persons are by no means considered as spies by the boys; they are their companions. At Hofwyl all that is not in itself wrong is permitted. I never like to forbid a thing when I am unable to assign a reason for doing so: it creates a confusion in young minds with regard to principle, a thing most dangerous to their future happiness. We have no boundary-mark, yet my boys stay at home; we interfere not with their pleasures, yet they cling to their duty.

"Within this enclosure is my eldest daughter's poor school for girls. She has about a hundred under her direction, who are fed and clothed by the establishment. To these she devotes her entire time. They learn all that in after-life will be of service to them:—to clean the house,—to cultivate the garden,—to sew,—to make all those little necessaries which are of so much importance in the cottage; to read, to sing,—to be cheerful, and to be happy. Unless our women be brought up in modesty, and with industrious and religious habits, it is in vain that we educate the men. It is they who keep the character of men in its proper elevation.

"Here is my school for the middling classes,—here all instruction has reference to practical purposes. Man was born to have dominion over the earth, and to subdue it, but it is by the intellect alone that he can do so. His unassisted strength, what is it? To conquer Nature he must understand her. Look in here, and you will see the laboratory of the chemist, and the lever and the pulley of the mechanic.

"In these two buildings are my poor school for boys, who are boarded and clothed by the establishment. And well they earn their maintenance, for the little fellows work ten hours a-day in the summer; and the expense that I incur in their behalf is nearly repaid by their exertions. They study for two hours each day, and this I consider sufficient. The case here is the reverse of the Institute, for bodily exertion is the labour and study the recreation. The habits I bring them up with are those which I desire should continue with them through life; they consequently have reference to their probable position in society. The habit of continued study would ill-become a person destined to gain his livelihood by his hands. Although there are now one hundred boys assembled here, mine were but small beginnings. I had but one pupil at first. It was long before I could find a master in whom I could confide. Do you observe those little patches of garden-ground? Each poor lad has one to himself; and the produce belongs exclusively to him. They usually dispose of it to the establishment, which either pays them the money at the time or lodges it for them in a little bank I have founded. Many of them have very considerable sums there. It is here that they obtain a habit of passing the greater portion of their time in continued and patient labour;—they become acquainted with the value of labour by the produce of their little gardens. The instruction that I give them, although somewhat more elevated than what is generally obtained by persons of their rank in life, is directed to the rendering perfect the senses and reflection,—to make them better practical men; drawing, the sciences of arithmetic and geometry, a useful selection from the other sciences, all taught in the most unostentatious manner: the history of their native country, and an acquaintance with the different natural objects around them, together with music, form the extent of their literary instruction.

"Religion is inculcated in every way. Public prayer, both at church and at school, is regularly performed in common with the schools of other countries. Besides this, these poor lads are taught to see the Creator in his works. When their admiration is roused by a natural object, they are accustomed to direct their thoughts to its Maker.

"But here," said my venerable companion, "is the engine upon which I rely for effecting the moral regeneration of my country (and my attention was directed to the men whom I had before seen in the morning); these are the masters of village schools, come here to imbibe my principles and to perfect themselves in their duty. These men have *six thousand* pupils under them; and if, by the blessing of God, I can continue the direction of them, success is certain."

To insure success M. de Fellenberg spares no pains,—no expense. There are no less than thirty-two professors solely devoted to his establishment, who inhabit a house to themselves upon the premises.

In all, there are about three hundred and fifty individuals in this little colony. Despite of his enemies, the spirit of De Fellenberg is spreading throughout Switzerland; and after having seen the parent institution, I visited several of his establishments in some of the remotest cantons.

A week closed my short sojourn at Hofwyl. I quitted it with a heavy heart; and the recollection of the moral beauty of what I there witnessed will remain riveted on my memory for ever.

THE WILD TURKEY.

(*Abridged from C. Bonaparte's 'American Birds.'*)

The native country of the wild turkey extends from the north-western territory of the United States to the isthmus of Panama; south of which it is not to be found. In Canada, and the now densely-peopled parts of the United States, this bird was formerly very abundant; but the progress and aggressions of man have compelled them to seek refuge in the remote interior. It is not probable that the range of the wild turkey extends to or beyond the Rocky Mountains. The Mandan Indians, who a few years ago visited the city of Washington, considered it one of the greatest curiosities they had seen, and prepared a skin of one to carry home for exhibition.

It is not necessary to be particular in describing the appearance of a bird so well known in its tame state. The difference consists chiefly in the superior size and beauty of plumage in the wild turkey; for, under the

care of man, this bird has greatly degenerated, not only in Europe and Asia, but in its native country. When full grown, the male wild turkey is nearly four feet in length and nearly five in extent, (from wing to wing,) and presents in its plumage a rich assortment of colours, brown predominating, which might be vainly sought in the domesticated bird. Altogether his appearance is such as, with other considerations, disposed Dr. Franklin to regret that he, rather than the bald eagle, had not been selected as the national emblem of the United States. But since the choleric temper and the vanity of the tame turkey have become proverbial in various languages, the authors of 'American Ornithology' are well pleased that its effigy was not placed on the North American escutcheon.

The wild turkeys do not confine themselves to any particular food; they eat maize, all sorts of berries, fruits, grasses, beetles; and even tadpoles, young frogs, and lizards are occasionally found in their crops; but where the pecun nut is plenty, they prefer that fruit to any other nourishment. Their more general predilection, however, is for the acorn, on which they rapidly fatten. When an unusually profuse crop of acorns is produced in a particular section of country, great numbers of turkeys are enticed from their ordinary haunts in the surrounding districts. About the beginning of October, while the mast still remains on the trees, they assemble in flocks and direct their course to the rich bottom lands. At this season they are observed in great numbers on the Ohio and Mississippi. The time of this irruption is known to the Indians by the name of the *Turkey month*.

The males, usually termed *gobblers*, associate in parties numbering from ten to one hundred, and seek their food apart from the females; whilst the latter either move about singly with their young, then nearly two-thirds grown, or—in company with other females and their families—form troops, sometimes consisting of seventy or eighty individuals. They are all intent on avoiding the old males, who, whenever opportunity offers, attack and destroy the young by repeated blows on the skull. All parties, however, travel in the same direction, and on foot, unless they are compelled to seek their individual safety by flying from the dog of the hunter, or their progress is impeded by a large river. When about to cross a river, they select the highest eminences, that their flight may be the more certain; and here they sometimes remain for a day or more, as if for the purpose of consultation, or to be duly prepared for so hazardous a voyage. During this time the males gobble obstreperously, and strut with extraordinary importance, as if they would animate their companions and inspire them with hardihood. The females and young also assume much of the pompous air of the males, the former spreading their tails and moving silently around. At length the assembled multitude mount to the tops of the highest trees, whence, at a signal note from a leader, the whole together wing their way towards the opposite shore. Immediately after these birds have succeeded in crossing a river, they for some time ramble about without any apparent unanimity of purpose, and a great many are destroyed by the hunters, though they are then least valuable.

When the turkeys have arrived in their land of abundance, they disperse in small flocks, composed of individuals of all ages and sexes intermingled, who devour all the mast as they advance: this occurs about the middle of November. It has been observed that, after these long journeys, the turkeys become so familiar as to venture on the plantations, and even approach so near the farm-houses as to enter the stables and corn-cribs in search of food. In this way they pass the autumn and part of the winter. During this season great numbers are killed by the inhabitants, who preserve them in a frozen state in order to transport them to a distant market.

Early in March they begin to pair. The sexes roost apart, but at no great distance, so that when the female utters a call, every male within hearing responds, rolling note for note, in the most rapid succession; not as when spreading the tail and strutting near the hen, but in a voice resembling that of the tame turkey, when he hears any unusual or frequently repeated noise. Where the turkeys are numerous, the woods, from one end to the other, sometimes for hundreds of miles, resound with this remarkable noise, uttered responsively from their roosting places. This is continued for about an hour; and, on the rising of the sun, they silently descend from their perches, and the males begin to strut, as if to win the admiration of their mates. Their process of approach to the females is remarkably pompous and ceremonious; and, in its course, the males often encounter one another and desperate battles ensue, when the conflict is only terminated by the flight or death of the vanquished. With the hen whose favour is thus obtained the male is mated for the season, though he does not hesitate to bestow his attentions on several females whenever an opportunity offers. One or more females, thus associated, follow their favourite and rest in his immediate neighbourhood, if not on the same tree, until they begin to lay, when they shun their mates, in order to save their eggs, which the male uniformly breaks if in his power. At this period the sexes separate, and the males, being much emaciated *, retire and conceal themselves by prostrate trees, in secluded parts of a forest, or in the almost impenetrable privacy of a cane-brake. By thus retiring, using very little exercise, and feeding on peculiar grasses, they recover their flesh and strength, and when this object is attained again congregate and re-commence their rambles.

About the middle of April, when the weather is dry, the female selects a proper place in which to deposit her eggs, secured from the encroachment of water, and as far as possible concealed from the watchful eye of the crow. The nest is placed on the ground, either on a dry ridge, in the fallen top of a dead leafy tree, under a thicket of sumach or briars, or by the side of a log: it is of a very simple structure, being composed of a few dry leaves. In this receptacle the eggs are deposited, sometimes to the number of twenty, but more usually from nine to fifteen; they are like those of the domestic bird.

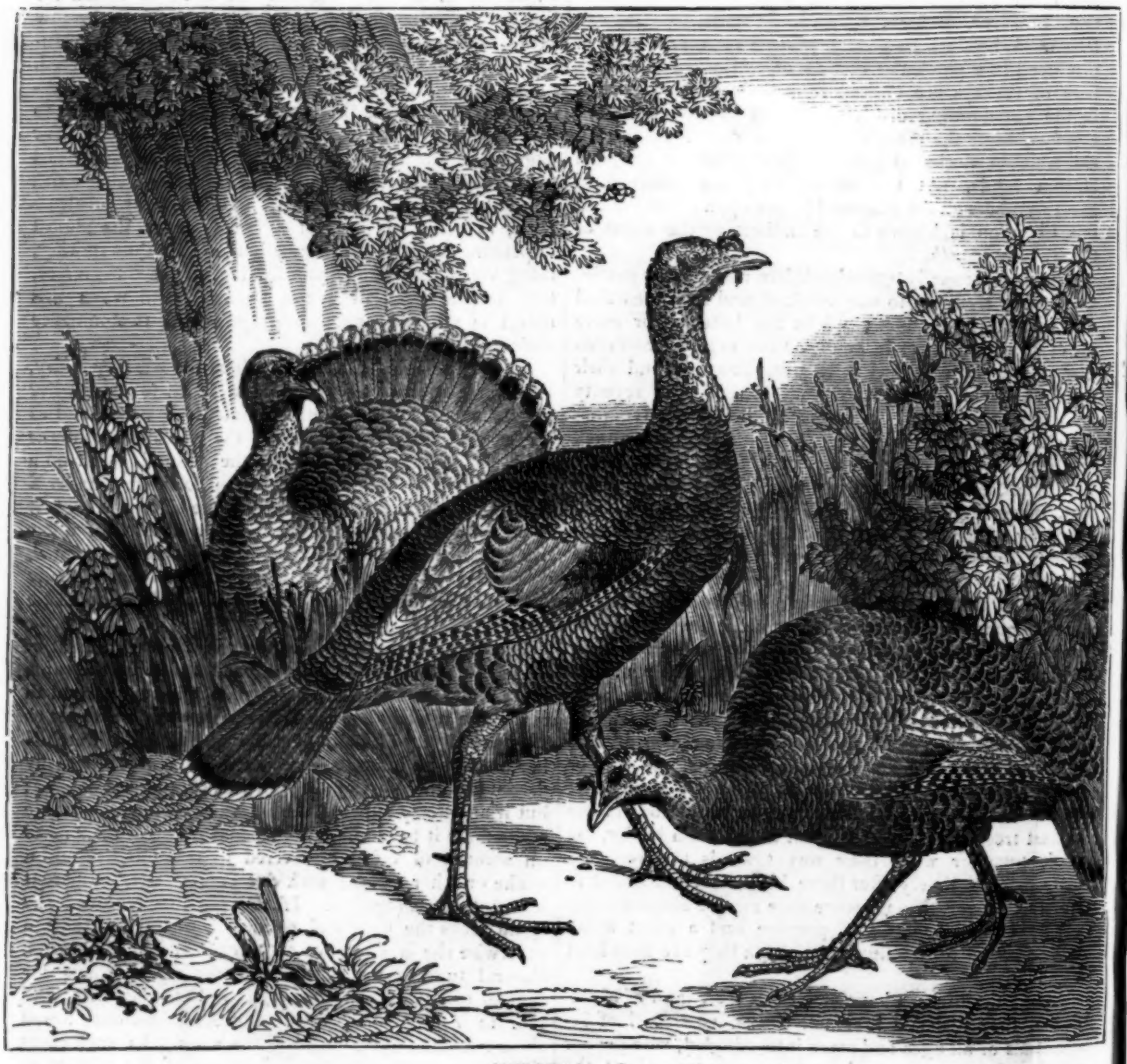
The female uses great caution in the concealment of her nest: she seldom approaches it twice by the same route; and on leaving her charge, she is very careful to cover the whole with dried leaves in such a manner as to make it very difficult even for one who has watched her motions to indicate the exact spot. Nor is she easily driven from her post by the approach of apparent danger; but if an enemy appears, she crouches as low as possible and suffers it to pass. They seldom abandon their nests on account of being discovered by man; but should a snake or other animal suck one of the eggs, the parent leaves them altogether. If the eggs be removed she again seeks the male and re-commences laying, though otherwise she lays but one set of eggs during the season. Several turkey-hens sometimes associate, perhaps for mutual safety, deposit their eggs in the same nest, and rear their broods together. Mr. Audubon once found three females sitting on forty-two eggs. In such cases the nest is commonly guarded by one of the parties, so that no crow, raven, or even polecat dares approach it. The mother will not forsake her eggs, when near hatch-

* The extraordinary leanness of this bird, at particular seasons of the year, of which this is one, has become proverbial in many Indian languages. An Omawhaw who wishes to make known his poverty says, "Wah pawne zezecah ha go ba;"—I am as poor as a turkey in summer.

ing, while life remains; she will suffer an enclosure to be made around and imprison her rather than abandon her charge.

As the hatching generally occurs in the afternoon and proceeds but slowly, the first night is commonly spent in the nest; but afterwards the mother leads them to elevated dry places, as if aware that humidity, during the first few days of their life, would be dangerous to them, they having then no other protection than a delicate, soft, hairy down. In rainy seasons wild turkeys are scarce, because when completely wetted the young rarely survive. At the expiration of about two weeks the young follow their mother to some low, large branch of a tree where they nestle under her broadly curved wings. The time then approaches when they seek the open ground or prairie land during the day in search of berries and grasshoppers, thus securing a plentiful supply of food and enjoying the genial influence of the sun. The young turkeys now grow rapidly, and in the month of August, when several broods flock together and are led by their mothers into the forest, they are stout, and able to secure themselves from the unexpected attacks of their enemies, by rising quickly from the ground and reaching with ease the upper limbs of the tallest tree.

It is rather surprising that, though the introduction of this bird into Europe is comparatively modern, its origin has been so much lost sight of, that eminent naturalists of the last century expressed themselves with great uncertainty concerning its native country. Thus Belon, Aldrovand, Gessner, Ray, and others, thought that it came originally from Africa and the East Indies, and endeavoured to recognize it in some of the domestic birds of the ancients. But its American origin is now clearly ascertained. This bird was sent from Mexico to Spain early in the sixteenth century; and from Spain it was introduced into England in 1524. Since that period they have been bred with so much care, that in England, as we read in ancient chronicles, their rapid increase rendered them attainable at country feasts, where they were a much esteemed dish, so early as 1585.



[Wild Turkeys.]

*** The Office of the Society for the Diffusion of Useful Knowledge is at 59, Lincoln's-Inn Fields.

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